

Graph using vertex form of equation
 $A(x-h)^2 + k \Rightarrow V(h, k)$

① $y = (x-1)^2 + 4$

$V(1, 4)$

Let $x=0$

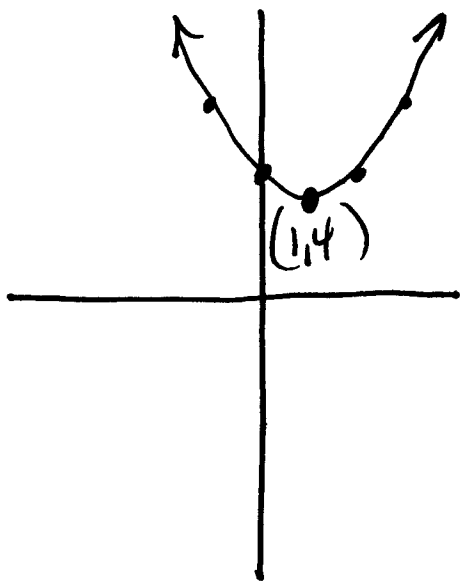
$$y = (0-1)^2 + 4$$

$$y = (-1)^2 + 4$$

$$y = 1 + 4$$

$$y = 5$$

| x | y |
|----|---|
| 3 | 8 |
| 2 | 5 |
| 1 | 4 |
| 0 | 5 |
| -1 | 8 |



② $y = -(x+2)^2 - 3$

$V(-2, -3)$

| x | y |
|----|----|
| 0 | -7 |
| -1 | -4 |
| -2 | -3 |
| -3 | -4 |
| -4 | -7 |

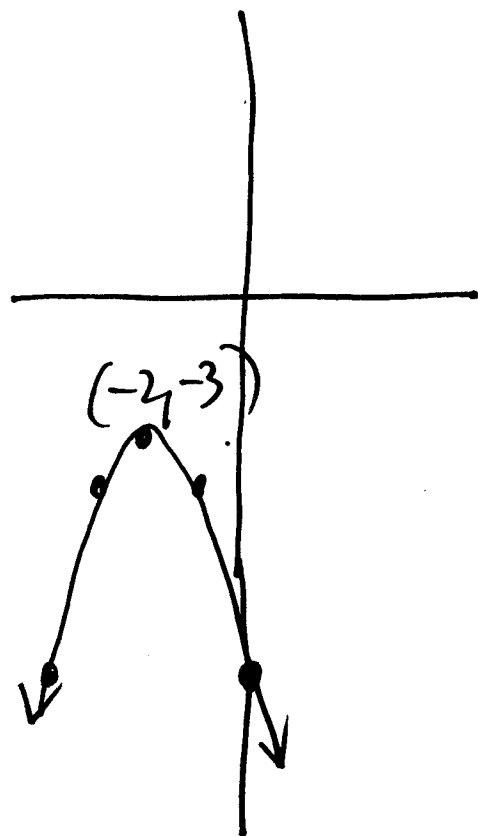
Let $x = -1$

$$y = -(-1+2)^2 - 3$$

$$= -(1)^2 - 3$$

$$= -1 - 3$$

$$y = -4$$



① $y = (x-1)^2 + 4 \leftarrow \text{Graphs} \rightarrow$ ② $y = -1(x+2)^2 - 3$

Algebra II CP 9
Unit 12B Review

Name _____
Date _____

I. Solve the quadratic equations using the square root property.

1) $a^2 - 12 = 16$

$$a^2 = 28$$

$$a = \pm\sqrt{28}$$

$$a = \pm 2\sqrt{7}$$

2) $(2m-1)^2 = -8$

$$2m-1 = \pm\sqrt{-8}$$

$$2m-1 = \pm 2i\sqrt{2}$$

$$2m = 1 \pm 2i\sqrt{2}$$

$$m = \frac{1 \pm 2i\sqrt{2}}{2}$$

II. Solve the quadratic equations by completing the square. 2

3) $x^2 + 12x + 4 = 0$

$$x^2 + 12x = -4$$

$$x^2 + 12x + 36 = +36 - 4$$

$$(x+6)^2 = 32$$

$$x+6 = \pm\sqrt{32}$$

$$x = -6 \pm 4\sqrt{2}$$

4) $x^2 - 9x + 21 = -4$

$$x^2 - 9x = -25$$

$$x^2 - 9x + \frac{81}{4} = \frac{-100}{4} + \frac{81}{4}$$

$$(x - \frac{9}{2})^2 = \frac{-19}{4}$$

$$x - \frac{9}{2} = \pm \frac{\sqrt{19}}{2}$$

$$x = \frac{9}{2} \pm \frac{\sqrt{19}}{2}$$

III. Solve the quadratic equations using factoring.

5) $x^2 + 5x - 14 = 0$

$$x^2 + 5x - 14 = 0$$

$$(x+7)(x-2) = 0$$

$$x = -7 \quad x = 2$$

6) $c^2 + 11c + 14 = 0$

not factorable

could solve using
quadratic formula

or

Completing the
square

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

IV. Solve the quadratic equations using the quadratic formula.

7) $2x^2 + 6x - 4 = 0$

$a=2$ $b=6$ $c=-4$

$$x = \frac{-6 \pm \sqrt{(6)^2 - 4(2)(-4)}}{2(2)}$$

$$x = \frac{-6 \pm \sqrt{68}}{4}$$

$$x = \frac{-6 \pm 2\sqrt{17}}{4}$$

$$x = \frac{-3 \pm \sqrt{17}}{2}$$

8) $4x^2 - 8x + 13 = 0$

$a=4$ $b=-8$ $c=13$

$$x = \frac{-(-8) \pm \sqrt{64 - 4(4)(13)}}{2(4)}$$

$$x = \frac{8 \pm \sqrt{-144}}{8}$$

$$x = \frac{8 \pm 12i}{8}$$

$$x = \frac{2 \pm 3i}{2}$$

V. Identify the value of the discriminant, and use it to determine the type and number of solutions each quadratic will have.

$$b^2 - 4ac$$

9) $2x^2 + 7x + 6 = 0$

$$7^2 - 4(2)(6)$$

$$49 - 48$$

$$1$$

2 REAL RATIONAL

10) $3x^2 - 5x - 6 = 0$

$$(-5)^2 - 4(3)(-6)$$

$$25 + 72$$

$$97$$

2 REAL IRRATIONAL

11) $x^2 - 8x = -16$

$$x^2 - 8x + 16 = 0$$

$$(-8)^2 - 4(1)(16)$$

$$64 - 64$$

$$0$$

1 Real Rational

12) $6x^2 - 2x + 5 = 0$

$$(-2)^2 - 4(6)(5)$$

$$4 - 120$$

$$-116$$

2 IMAGINARY